Sevier formation Gray calcareous sandy shale

Chota formation Blue-gray calcarenite, containing much quartz sand

Oc

Tellico formation Gray platy sandy or silty calcareous shale, Ot, and beds of blue-gray calcareous sandstone, the thicker of which are separately mapped as Ots

Blockhouse shale Dark-gray fissile calcareous shale, containing graptolites, Ob, with Toquo sandstone member, Obs, locally in lower part; thin basal Whitesburg limestone member not separately shown on map

MINOR DISCONFORMITY

Lenoir limestone

ICIAN Cobbly argillaceous limestone, locally with light-gray aphanitic Mosheim limestone member and basal clastic Douglas Lake member, not separately shown on map OR

MAJOR DISCONFORMITY

North part of area:

Middle

Lower Ordovician

Chilhowee group

South part of area:

Newala limestone Gray fossiliferous limestone, with some interbedded dolomite and

Longview dolomite Gray fine- and coarsegrained dolomite, in part

Och

Chepultepec dolomite Gray limestone, containing subordinate dolomite; some sandstone in lower

Oj Jonesboro limestone

Light-gray limestone, laminated to thick-bedded; some interbedded dolomiteand a few beds of sandy limestone. Symbol in parentheses indicates Jonesboro limestone under alluvial deposits in Big Spring window

SEQUENCE BROKEN

Chilhowee Mountain

Shady dolomite Thick-bedded dolomite, in part weathered at surface to residual clay

Helenmode formation Gray micaceous shale, with beds of coarse sandstone

> €h Hesse sandstone Thick-bedded white quartzite

Murray shale Greenish-gray argillaceous to silty shale

€nb

Nebo sandstone Thin-bedded white quartzite, containing Scolithus

Nichols shale Greenish-gray argillaceous to silty shale, En; some layers of sandstone and quartzite, Ens

Cochran formation

Light-gray vitreous arkose and quartzite in upper half, passing down into maroon pebbly arkose with interbedded layers of maroon shale and siltstone; some conglomerate at base. Includes tectonic slices of quartzite along Great Smoky fault, mostly of Cochran formation but including some Nebo and Hesse sandstones in places

PROBABLE DISCONFORMITY

Sandsuck formation Greenish-gray argillaceous and silty shale, pEs, with thick interbedded lenticular units of sandstone and quartz-pebble conglomerate, pEsc

SEQUENCE BROKEN

Northern foothill area

p€wls 7

Upper unit of Wilhite formation Argillaceous shale or slate; pEwu, containing many thin layers of carbonate rocks, and a few thicker bodies of limestone and sandy limestone, p-Cwls

> p-€wl p€wq_

Lower unit of Wilhite formation Siltstone and silty shale, PEwkin part containing carbonate-bearing laminae, interbedded in upper part with units of white vitreous quartzite, pEwq, and of sandstone and conglomerate, pEwc, containing pebbles of quartz, and of quartzite, granite, and other rocks

Shields formation Coarse conglomerate of quartz pebbles and cobbles, and coarsegrained pebbly sandstone, pCsh; interbedded with dark-gray to greenish-gray laminated slate, pEss, the latter dominating up-

Licklog and Licklog(?) formation Includes Licklog formation in northeast part of area, continuous with type locality of the formation, and Licklog (?) formation farther southwest, in similar stratigraphic position but of more doubtful affinities. Argillaceous slate and phyllite, greenish below, changing to gray above, pEl. North of Tuckaleechee Cove contains two thick units of gray sandstone in upper part, pEls

SEQUENCE BROKEN

PRECAMBRIAN

LATER

Mountain area

(Upper plate of Greenbrier fault)

Unnamed sandstone Coarse-grained sandstone and finegrained conglomerate, resembling Thunderhead sandstone; preserved only in southwest part of area

Anakeesta formation Dark-gray to black slaty to schistose silty and argillaceous rocks, with numerous thin to thick beds of dark- to light-gray sandstone, pCa. Split toward east by a tongue of Thunderhead sandstone into lower and upper tongues, pEal and pEau

Thunderhead sandstone

Gray feldspathic coarse-grained sandstone and fine-grained conglomerate in thick graded layers, with dark-gray slate or schist partings, pEt; standing in prominent ledges and cliffs, shown on map by black hachures. Grains and pebbles are characteristically of potassium feldspar, glassy quartz, and blue quartz but with many pebbles of leucogranite in Cove Mountain area. In Cove Mountain, this phase changes northeastward into a coarsegrained angular phase. A thicker slate layer, pCts, separately mapped near Blanket Mountain. Upper part extends southwestward as a tongue, pCtt, between tongues of Anakeesta formation



Elkmont sandstone grained and thinner bedded than Thunderhead sandstone, containing blue quartz less abundantly, with many thin to thick interbedded layers of dark-gray argillaceous and silty rocks, pce. In Elkmont area, coarser sandstone and conglomerate of various types are separately mapped as pees; the upper part resembles the Thunderhead sandstone and may be equivalent to lower part of Thunderhead in southwest part of

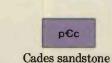
SEQUENCE UNDETERMINED

CAMBRIAN

IAN(?)

CAMBR

Southern foothill area (Beneath Greenbrier fault)



Medium- to coarse-grained sandstone in thin to thick layers, with numerous interbedded layers of dark-gray slate

SEQUENCE BROKEN Western part of southern

foothill area

p€m Metcalf phyllite

Greenish and chloritic, argillaceous and silty rocks, phyllitic, strongly metamorphosed and sheared. Except for greater physical metamorphism resembles Pigeon siltstone and Roaring Fork sandstone farther east; is probably equivalent of former, and perhaps partly of latter

Rich Butt sandstone Thick beds of gray fine-

grained feldspathic sandstone, resembling Roaring Fork sandstone, with a few rare coarser layers, pCr; contains some interbedded units of black slate,



Pigeon siltstone Main body of formation, p€p, is thick, monotonous sequence of green or blue-green indurated chloritic siltstone, with some interbedded layers of fine-grained feldspathic sandstone, the thicker separately mapped as peps. Upper part is a carbonate-bearing member, pEpu, of gray siltstone containing numerous laminae of ironbearing carbonate



Roaring Fork sandstone Thin to thick beds of finegrained gray feldspathic sandstone, the more prominent separately mapped as perfs, interbedded with siltstone like that of Pigeon, and with laminated chloritic phyl-

BASE CONCEALED

Intrusive igneous rocks



Metadiorite Forms small sills in extreme southeast part of area LEOZOIC (?)

Contact Long dashes where approximately located; short dashes where indefinite; dotted where concealed; queried

Fault, showing dip Dashed where approximately located; dotted where concealed; queried where doubtful

> Thrust fault T, upthrown side

Transcurrent or tear fault Arrows indicate relative direction of strike-slip movement

Unclassified high-angle fault Dip-slip movement indicated by U, for upthrown side, D, for downthrown side

> Great Smoky fault Barbs on upper plate

Greenbrier fault Barbs on upper plate

Faults at bases of intermediate slices beneath Greenbrier fault Barbs on upper plate

Surface of movement Basal contact of Blockhouse shale in Tuckaleechee Cove. Originally a disconformable sedimentary contact, still preserved in places; in others transformed by differential movement; in part a fault of considerable displacement

Anticline Showing trace of axial plane and bearing and plunge of axis

Syncline Showing trace of axial plane and bearing and plunge of axis

Anticlinal Synclinal Overturned Unclassified Horizontal Plunge of minor fold axes

> Inclined Overturned Vertical Horizontal Strike and dip of beds

156 Inclined Vertical Strike and dip of first-generation foliation Fracture cleavage, slaty cleavage, and schistocity

Trend and plunge of linear structures Trend and plunge of elongated mineral segregations, clastic grains, or concretions; generally combined on map with symbol for first-generation foliation

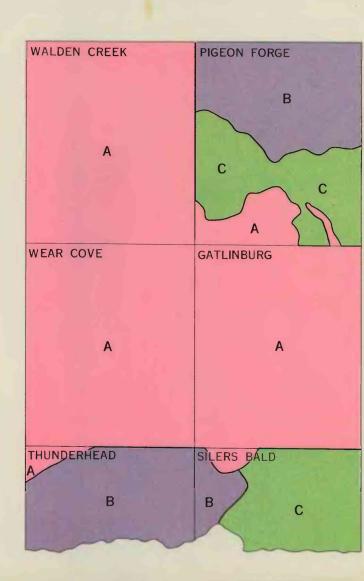
Inclined Vertical Horizontal Strike and dip of second-generation foliation Slip cleavage and shear cleavage

Terrace scarp in alluvial deposits

Ledges and cliffs of sandstone beds in Great Smoky

Fossil localities in Ordovician rocks

Structure sections shown on Plate 9



A. Areas covered by closely spaced traverses; geologic relations accurately determined

B. Areas covered by widely spaced traverses; geologic relations well determined

C. Areas covered by widely spaced traverses; which are inadequate to explain all the geologic relations

WALDEN CREEK PIGEON FORGE WEAR COVE GATLINBURG D THUNDERHEAD SILERS BALD

A. P. B. King, 1946-48

B. P.B. King and R.B. Neuman, 1949

C. P. B. King, 1948-54, with data from J. K. Lydecker, 1947, and W. B. Hamilton, 1954

D. P.B. King, 1951-54, with data from H. W. Ferguson and G. D. Swingle, 1947 E. H. W. Ferguson and G. D. Swingle, 1947

F. H. W. Ferguson and G. D. Swingle, 1946-47, with revisions by P. B. King, 1953-54

G. R. B. Neuman, 1950-51 H. R. B. Neuman, 1950-51, with data from H. W. Fer-

guson and G. D. Swingle, 1947 I. R. B. Neuman, 1950-51, with data from P. B. King,

1946-47 J. W. B. Hamilton, 1954

K. J. B. Hadley, 1949 L. J. G. Bumgarner, 1956, with data from R. B. Neuman, 1951

INTERIOR-GEOLOGICAL SURVEY, WASHINGTON, D. C.- G 62096

Base maps by Tennessee Valley Authority and U.S. Geological Survey